Factors Affecting the Use of Social and Health Services Among the Elderly

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ABSTRACT
This study has systematically examined the use of health and social services among non-institutionalized elderly people according to the Andersen model which groups factors influencing use into predisposing, enabling and need variables. Need for service as evidenced by physical and psychological functioning was the most important predictor of use of physician services and hospitalization. Predisposing factors had the most effect on use of dental services. On the other hand, knowledge of services, an enabling factor, was most relevant to use of social services. Since this factor is manipulable to planned change, several program strategies were suggested for increasing awareness of social services particularly among the impaired elderly.

Introduction

In the past few years, researchers have shown an increased interest in the study of factors which determine the use of health services. This appears to stem from a general interest in identifying cultural, social, psychological and economic influences that affect variation in the use of services. Major explanatory factors include: (1) personal attributes which may predispose individuals to seek care; (2) need for services as evidenced by illness; and (3) enabling factors such as financial capability to pay for care, ability to get to places where services are offered, and knowledge about the service network in the community.[1] Recently, investigators have employed multivariate approaches to assess the relative importance of these factors in explaining health services use.[2, 3, 4, 5]

While literature on the use of health services is expanding, the deter-

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minants of use of social services have yet to be systematically studied. Many critical issues pertaining to care for the elderly need to be studied. For instance, do the factors which have been associated with health services exert a similar influence on the use of social services? To what extent is the level of demand for social and health services similar? Does the use of health services affect the use of social services or vice-versa? In this study, we sought to answer these questions about utilization of services among the non-institutionalized elderly.

Related research

In the analysis of social and individual determinants of health services use among families, Andersen and Newman[6] have classified variables according to whether they are predisposing, enabling or need factors. This model has been widely applied to the study of the use of physicians' services,[7] ambulatory care,[8] and dental services[9] to reveal the relative contribution of different sets of variables which may influence health care. Need is usually measured by symptoms of illness perceived by the individuals, their responses and evaluations of the disabling effects or by medical assessment of health status and physician rating of the urgency of the condition. Enabling factors refer to conditions that facilitate or impede the use of services by an individual who is predisposed to seek care. Predisposing factors include those social-structural and demographic factors which influence health care attitudes and beliefs.[10] As shown in Figure 1. Predisposing factors may influence enabling factors and both may affect need for care as well as utilization.
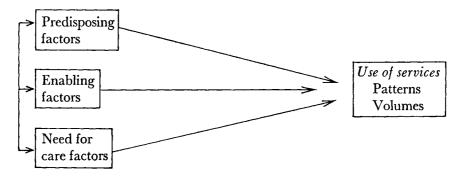

FIGURE 1. The Determinants of Use of Services

In general, studies have found that perceived needs explain more variance in the use of physician and ambulatory health services than do predisposing and enabling variables.[11, 12, 13]

Looking at ambulatory services, it has been reported in these studies that poor health and willingness to seek care for symptoms were the primary determinants of family use of these services. Since the number of chronic conditions increases with age, there is an apparent relationship between predisposing and need variables. Berki and Kobashigawa (1976) have related a number of chronic conditions to use of services. The enabling variable of the existence or absence of a regular source of care was also observed to contribute to the use of services.[14, 15, 16]

As with ambulatory services, recent studies also demonstrate that illness explains most of the variance in the number of visits made to physicians,[17, 18] followed by the predisposing variables of age and sex. Wan and Soifer noted, nonetheless, the importance of two enabling factors, cost per physician visit and possession of insurance coverage. Research has, in fact, shown that people with any form of health insurance, including Medicare and Medicaid, tend to consume more services than those who had no insurance.[19, 20]

While need variables are highly associated with the use of nondiscretionary health services (health services for which immediate care is required), some enabling and predisposing variables have also been shown to be important in whether or not people decide to use dental services. The people most likely to use dental services are females, whites, those with higher incomes, higher levels of education and urban residence.[21, 22, 23]

The application of theoretical models which include the above factors to the study of the use of health services has been criticized by Wolinsky because of the failure of predisposing and enabling factors to account for substantial variation in use. It may be, however, that predisposing and enabling factors exert more influence in an examination of the use of social services due to differences between health and social services in thir nature, in the type of services rendered, and variations in ability to recognize the need for service. To date, studies of social services have generally focused upon specific services such as day care[24] rather than the whole gamut of services now available to the elderly or on specific user populations such as those from ethnic minorities[25] or native born Americans.[26] There has been no systematic study of the use of a range of social services by a cross-section of elderly employing a conceptual framework similar to that used by Andersen. We hypothesize, however, that if predictor variables are grouped within a framework similar to Andersen's, need may not be as important a determinant of the use of social services as other factors, such as knowledge of available services or the availability of social support from family or friends.

Data and Methods

Sample: In order to test our assumption, data collected from a community survey conducted in Baltimore County, Maryland during the summer of 1978 were analyzed. Baltimore County is a predominantly white, metropolitan, surburban community adjacent to Baltimore City. The survey was originally contracted by the Baltimore County Department of Aging to assess service needs in their area. The Department of Aging is well established in Baltimore County and offers a broad range of social services including day care, counselling, congregate meals and a variety of health-related services such as home health aides (see Appendix). Subjects were selected by neighbourhood canvassing of elderly residents age 60 and over through a quota sampling procedure. From a total of 1,300 persons surveyed, a sample size of 1,182 persons resulted which represented 1 per cent of persons of this age group in Baltimore County. About 60 per cent of those sampled were female, over half were married, one third were widowed and three quarters were between the ages of fifty-five and seventy-five.

Methods: Examination of the use of health and social services by older adults proceeded in two stages. In the first stage, we used regression analysis to identify the relative importance of sets of factors in explaining variations in the use of services.

We adapted Andersen's model of utilization to our study and grouped independent variables presumed to influence the use of social and health services into predisposing, enabling and need categories. In our model of service utilization, predisposing variables included age, sex, educational level, marital and retirement status, and living arrangement.

Enabling variables included social support, knowledge about service programs, insurance coverage, and access to transportation. The availability of social support was ascertained by asking people if they had someone to talk to, someone to trust and confide in, and someone who would give help if they were sick or disabled. Knowledge of programs was measured by awareness of available programs. Perception of access to transportation was presented as degrees of perceived difficulty in getting the transportation needed to obtain available services. The several types of insurance coverage examined included Medicaid, Medicare 'A' only, Medicare 'A' and 'B', Blue Cross/Blue Shield, and prepaid health plans. Seventy-three per cent of all respondents had Blue Cross/Blue Shield insurance and 45 per cent had Medicare 'A' and 'B' coverage (see Table 1).

Need for services was measured by an assessment of physical, psychological and social functioning using the Activities of Daily Living Scale

TABLE I. *Do you have any health or medical coverage?*

Health Insurance	Total	Southwest	Northwest	North	Northeast	Southeast
% Have Medicaid	14.9	9.9	14.3	14.7	16.8	21.7
% Have Medicare "A" only	24.5	28.3	25.7	11.0	30.1	18.6
% Have Medicare "A" & "B"	44.9	48.0	48.6	59.5	37.9	37.6
% Have Blue Cross/Blue Shield	73.5	77.6	74.3	82.8	71.4	62.0
% Have A prepaid health plan	18.4	17.7	21.4	23.9	15.5	18.6

Source: 1978 SNAP Survey of the Elderly, Baltimore County, Maryland.

(ADL),[27] the Instrumental Activities of Daily Living Scale (IADL),[28] psychological depression score[29] and perceived service needs. The ADL measures basic functional capacity such as the ability to bathe, feed and dress oneself while the IADL is more sensitive to limitations in performance of tasks imposed by functional impairment which limit ability to live independently. Psychological depression was asked by questions such as 'Are you being plotted against?' Is your daily life full of things to keep you interested?' Service needs were defined as the number of social service programs that the respondents would like to use.

While our models for health and social services use are almost identical, we felt that one variable 'economic dependence' merited different treatment in these two service settings. Economic dependency was viewed as a predisposing variable in relation to use of health care services and as a need variable in relation to use of social services. Dependency may generate different responses in these two service networks. Respondents were regarded as being economically dependent if they regarded themselves as being in need of formalized financial aid. While social service networks may address economic need directly through program strategies (for example, SSI), health care networks do not give a direct response to economic problems. In the health care network, economic status may influence the desire to use services but does not specifically determine the need for them.

In the second stage of our analysis, Multiple Classification Analysis (MCA) was employed in order to further clarify the differences in patterns of use when all but one of the population characteristics were controlled. MCA is an analytical technique which examines both the effect of a predictor variable on a dependent variable when taken by itself and also its effect on the dependent variables after adjustments are made for intercorrelations with other predictors.[30] Population characteristics con-

sidered included age/sex, marital status, living arrangement, disability status and geographical area of residence. Geographic areas studied were subdivisions or service areas designated by the Baltimore County Department of Aging. They included the North, Northeast, Northwest, Southwest and Southeast. There was substantial variation between areas in education, occupation and overall economic well-being. Residents of the Southeast had considerably less education, were more likely to be blue-collar workers, and were more likely to be recipients of formal financial assistance such as Supplementary Security Income. On the other hand, residents of the North who were the most educated were the most likely to be white-collar professionals.

Findings

Use of health services
Our study considered the following four dimensions of health services use: use of physician and dental services, hospitalization, and institutionalization.

Physician services: The results of regression analysis (see Table 2) clearly show that need factors are of primary importance in explaining variations in use of physician services as measured by the number of visits made to physicians annually. While the total model explained about 9 per cent of the variance in number of physician visits, need variables accounted for 8 per cent of the variance. All four of the need factors examined were statistically significant predictors of physician visits. Persons who had relatively higher levels of psychological dysfunctioning, more difficulty in performing IADL activities and who perceived need for social services saw physicians more often. Having relatively less trouble with functions such as bathing, feeding and dressing (ADL) was also associated with greater use. Persons having limitation in these more basic functions may already be institutionalized and, therefore, be excluded from our study population.

Having high levels of economic dependence, a predisposing factor, and low knowledge of available services, an enabling factor, were also related to use. It may be that people who have a low knowledge of available social services use physicians as a sounding board for non-medical problems which could be more appropriately handled by non-medical counsellors. The finding of no apparent relationship between insurance coverage and the use of physician's services is most likely due to the fact that most of the population studied are covered by Medicare, Medicaid, or private insur-

TABLE 2. *Regression of physician visits on predisposing, enabling, and need factors (N = 1,182)*

Independent Variable	Partial Regression Coefficients in Standard Form			
	All Independent Variables	Predisposing Factors	Need Factors	Enabling Factors
1. Sex	.001	.16		
2. Age	.003	.053		
3. Educational Level	.033	—.011		
4. Living Alone	.000	—.001		
5. Married	—.020	—.036		
6. Retired	.024	.021		
7. Economic Dependency	.010	.073*		
8. ADL Score	—.111*		—.105*	
9. IADL Score	.178*		.171*	
10. Depression Score	.174*		.150*	
11. Perceived Need for Service	.117*		.103*	
12. Transportation Barriers	—.074*			.027
13. Knowledge of Service	—.006			—.051*
14. Social Support	.052			.038
15. Medicaid Coverage	—.020			.000
16. Medicaid A only	—.000			.015
17. Blue Cross/Blue Shield	.007			—.011
18. Prepaid Health Plan	—.018			—.033
Multiple Regression	—.302	.102	.284	.079
R^2	—.091	.010	.080	.006

* Significant at 0.05 or lower level.
Source: 1978 SNAP Survey of the Elderly, Baltimore County, Maryland.

ance. Thus, the effect of health insurance variable on physician visits is negligible.

Multiple classification analysis further underscores the important influence need variables have in explaining the number of visits to a physician and the likelihood of using the services of a physician (see Tables 3 and 4). Likelihood refers to having at least one visit to a physician during the year prior to this study. In our population, the annual average number of visits to physicians was 5.61, somewhat lower than the national average for this age group of 6.7.[31] As was expected, having a disabling condition was the most significant predictor of the number of such visits (Table 3) and the only significant predictor of the likelihood to use the services of a physician (Table 4). Persons who reported thirty-one or more disability days had three times as many visits to a physician as those with no disabling condition. Also, widowed ($\bar{x} = 6.69$) or divorced/separated ($\bar{x} = 6.26$) respondents had higher numbers of physician visits than persons who were never married or married and persons living alone had more visits ($\bar{x} = 5.78$) than those who lived with others. This suggests that experien-

TABLE 3. *Multiple classification analysis of the number of physician visits in a year* $(mean = 5.61; R^2 = 0.162)$

Predictors	Mean (Doctor Visits)	Adjusted mean	Gross Effect[2] (Eta)	Net Effect[3] (Beta)
Area:				
Southwest	6.38	6.22	0.08	0.07
Northwest	4.09	4.14		
North	5.28	5.71		
Northeast	5.12	5.20		
Southeast	5.65	5.48		
Age-Sex:				
Male (55–74)	5.44	5.45	0.09	0.05
Female (55–74)	5.24	5.26		
Male (75+)	5.39	5.61		
Female (75+)	7.31	6.43		
Marital Status:				
Never married	4.36	4.40	0.11	0.12*
Married	4.94	4.89		
Separated/Divorced	6.26	6.43		
Widowed	6.69	6.73		
Living Arrangements				
Living alone	5.78	4.70	0.01	0.07*
Not living alone	5.55	5.94		
Disability Status:				
No disabling condition	4.11	4.4	0.38	0.37*
Disabled for 1–6 days	6.57	6.59		
Disabled for 7–30 days	9.36	9.23		
Disabled for 31+ days	15.32	15.13		

* Significant at 0.05 or lower level.
[1] The average number of physician visits for each subclass of a predictor was adjusted for other four predictors.
[2] The gross effect refers to probability of a predictor variable to explain variation in the dependent variable without taking other factors into account.
[3] The net effect refers to the ability of a predictor variable to explain variation in the dependent variable while the effects of other predictors are controlled.
Source: 1978 SNAP Survey of the Elderly, Baltimore County, Maryland.

cing changes in marital status or living alone may have some adverse effect on health or on the perception of need for health services.

Hospitalization: Tables 5 and 6 show the effects of predisposing, enabling and need factors on (1) the likelihood of being hospitalized and (2) the number of days hospitalized. All variables considered account for approximately 6 per cent of the variance in both measures of hospitalization. Need factors account for 5 per cent of the variation in hospitalization and in the number of days hospitalized. As with use of physician services, need was more important than either predisposing or enabling factors. Respondents who had high levels of functional disability, poorer psychological functioning and who perceived need for social services were signi-

TABLE 4. *Multiple classification analysis of the likelihood of having a physician visit in a year (average proportion or likelihood = 80.03; $R^2 = 0.04$)*

Predictors	Proportion of having a doctor visit	Adjusted[1] proportion	Gross Effect[2] (Eta)	Net Effect[3] (Beta)
Area:			0.04	0.05
Southwest	78.82	78.46		
Northwest	80.00	79.10		
North	84.05	84.71		
Northeast	79.05	80.37		
Southeast	80.09	79.25		
Age-Sex			0.07	0.07
Male (55–74)	80.12	79.95		
Female (55–74)	78.53	78.55		
Male (75+)	77.27	77.97		
Female (75+)	86.21	86.10		
Marital Status:			0.04	0.04
Never married	78.69	78.98		
Married	79.40	79.69		
Separated/Divorced	87.23	87.98		
Widowed	80.37	79.81		
Living Arrangements:			0.02	0.03
Living alone	78.98	77.74		
Not living alone	80.41	80.86		
Disability Status:			0.18	0.18*
No disabling condition	75.90	75.98		
Disabled for 1–6 days	86.21	86.22		
Disabled for 7–30 days	94.12	94.16		
Disabled for 31+ days	96.25	96.34		

* Significant at 0.05 or lower level.
[1] The proportion of those who made a doctor visit for each subclass of a predictor was adjusted for the other four predictors.
[2] The gross effect refers to probability of a predictor variable to explain variation in the dependent variable without taking other factors into account.
[3] The net effect refers to the ability of a predictor variable to explain variation in the dependent variable while the effects of the other predictors are controlled.

Source: 1978 SNAP Survey of the Elderly, Baltimore County, Maryland.

ficantly more likely to be hospitalized. Functioning impairment and perceived need for service were also related to length of hospitalization. Respondents who were significantly more likely to be hospitalized were those who had less education, higher levels of economic dependency, perceived greater transportation problems and did not belong to a prepaid health insurance plan. Education and prepaid health insurance were similarly related to number of days hospitalized. While previous research suggests that insurance coverage is positively associated with hospitalization, our results, at least, with respect to prepaid health insurance, imply that the emphasis on preventive or primary care of the prepaid health

TABLE 5. *Regression of likelihood of hospitalization on predisposing, enabling and need factors (N = 1,182)*

Partial Regression Coefficients in Standard Form

Independent Variable	All Independent Variables	Predisposing Factors	Need Factors	Enabling Factors
1. Sex	−.007	.011		
2. Age	−.020	.028		
3. Educational Level	−.033	−.063*		
4. Living Alone	.016	.012		
5. Married	.000	−.011		
6. Retired	.026	.023		
7. Economic Dependency	.022	.076*		
8. ADL Score	−.005		−.005	
9. IADL Score	.129		.127*	
10. Depression Score	.069*		.072*	
11. Perceived Need for Services	.088*		.094*	
12. Transportation Barriers	.002			.075*
13. Knowledge of Services	.002			−.035
14. Social Support	.004			.039
15. Medicaid Coverage	−.048			.030
16. Medicare A only	.001			.020
17. Blue Cross/Blue Shield	−.002			−.026
18. Prepaid Health Plan	−.043			−.061*
Multiple Regression	.240	.115	.228	.121
R²	.060	.013	.052	.014

* Significant at 0.05 or lower level.

TABLE 6. *Regression of number of hospitalization days on predisposing, enabling and need factors (N = 1,182)*

Partial Regression Coefficients in Standard Form

Independent Variable	All Independent Variables	Predisposing Factors	Need Factors	Enabling Factors
1. Sex	.002	.014		
2. Age	−.071*	.004		
3. Educational Level	−.042	−.075*		
4. Living Alone	−.011	−.021		
5. Married	.008	−.000		
6. Retired	−.025	−.030		
7. Economic Dependency	−.019	.037		
8. ADL Score	−.018		−.017	
9. IADL Score	.203*		.185*	
10. Depression Score	.011		.022	
11. Perceived Need for Services	.086*		.081*	
12. Transportation Barriers	−.007			.053
13. Knowledge of Services	−.023			.050
14. Social Support	.013			.018
15. Medicaid Coverage	0.11			.023
16. Medicare A only	−.026			−.019
17. Blue Cross/Blue Shield	.006			.022
18. Prepaid Health Plan	−.058*			−.075*
Multiple Regression	.258	.099	.233	.114
R²	.066	.009	.054	.013

* Significant at 0.05 or lower level.
Source: 1978 SNAP Survey of the Elderly, Baltimore County, Maryland.

practice (e.g. health maintenance organization) may reduce both the incidence of hospitalization and the length of stay in a hospital.

Widowed persons were likely to be significantly more hospitalized a greater number of days per year ($\bar{x}$ = 4.80) as were persons not living alone ($\bar{x}$ = 3.30). There appears to be no definitive explanation of why persons not living alone are hospitalized more often, particularly in the light of the fact that those living alone have more physician visits. It may be, however, that those not living alone have more serious conditions which require the presence of someone else in the home to care for them. The mean number of days hospitalized was 3.16 per year. This figure is far below the USDHEW 1947 national average of 11.7 days for people 65 years and over.

TABLE 7. *Multiple classification analysis of the likelihood of being hospitalized in a year (average proportion = 9.98; R^2 = 0.262)*

Predictors	Proportion being hospitalized	Adjusted[1] proportion	Gross Effect[2] (Eta)	Net Effect[3] (Beta)
Area:			0.07	0.04
Southwest	12.32	11.66		
Northwest	8.57	9.26		
North	6.75	9.25		
Northeast	8.39	8.45		
Southeast	10.86	9.90		
Age-Sex:			0.06	0.04
Male (55–74)	8.07	8.81		
Female (55–74)	9.60	9.98		
Male (75+)	13.64	14.11		
Female (75+)	13.22	9.90		
Marital Status:			0.09	0.06
Never married	8.20	8.81		
Married	7.86	9.98		
Separated/Divorced	10.64	14.11		
Widowed	13.24	10.22		
Living Arrangements:			0.02	0.03
Living alone	11.15	8.47		
Not living alone	9.56	10.53		
Disability Status:			0.50	0.50*
No disabling condition	2.86	2.87		
Disabled for 1–6 days	9.77	9.63		
Disabled for 7–30 days	41.18	40.79		
Disabled for 31+ days	52.50	52.22		

* Significant at 0.05 or lower level.
[1] The proportion of persons being hospitalized for each subclass of a predictor was adjusted for other four predictors.
[2] The gross effect refers to probability of a predictor variable to explain variation in the dependent variable without taking other factors into account.
[3] The net effect refers to the ability of a predictor variable to explain variation in the dependent variable while the effects of other predictors are controlled.
Source: 1978 SNAP Survey of the Elderly, Baltimore County, Maryland.

TABLE 8. *Multiple classification analysis of the number of days in hospitals in a year* $(Mean = 3.16; R^2 = 0.192)$

Predictors	Mean (hospitalized)	Adjusted[1] mean	Gross Effect[2] (Eta)	Net Effect[3] (Beta)
Area:			0.06	0.04
Southwest	3.36	2.96		
Northwest	2.06	2.45		
North	1.40	2.27		
Northeast	3.37	3.47		
Southeast	4.15	3.96		
Age-Sex:			0.06	0.03
Male (55–74)	2.66	2.93		
Female (55–74)	2.91	3.04		
Male (75+)	2.66	2.76		
Female (75+)	5.24	4.12		
Marital Status:			0.09	0.11*
Never married	2.49	2.99		
Married	2.23	1.92		
Separated/Divorced	1.40	1.81		
Widowed	4.80	5.13		
Living Arrangements:			0.02	0.09*
Living alone	2.79	0.92		
Not living alone	3.30	3.97		
Disability Status:			0.42	0.42*
No disabling condition	0.77	0.87		
Disabled for 1–6 days	1.83	1.60		
Disabled for 7–30 days	10.16	9.89		
Disabled 31+ days	24.17	24.03		

* Significant at 0.05 or lower level.
[1] The average number of hospital days for each subclass of a predictor was adjusted for other four predictors.
[2] The gross effect refers to probability of a predictor variable to explain variation in the dependent variable without taking other factors into account.
[3] The net effect refers to the ability of a predictor variable to explain variation in the dependent variable while the effects of other predictors are controlled.
Source: 1978 SNAP Survey of the Elderly, Baltimore County, Maryland.

Institutionalization: Institutionalization, a third kind of use of health services, is indicative of a serious physical impairment. Only 1 per cent of the study population had been institutionalized at some time during the year prior to our study (see Table 9); a figure lower than the national average of 4 per cent. Because of the small number of persons institutionalized, regression analysis was not performed to determine the relative importance of predisposing, enabling and need factors in institutionalization. However, results from MCA suggest that need factors would be the primary determinants of the likelihood of being 'institutionalized' since disability status was the only significant predictor of institutionalization. An average of 6 per cent of those who reported that they were disabled for thirty-one days or more were institutionalized.

TABLE 9. *Multiple classification analysis of the likelihood of being institutionalized in a year (average proportion = 1.27; $R^2 = 0.038$)*

Predictors	Proportion being institutionalized in nursing homes	Adjusted[1] proportion	Gross Effect[2] (Eta)	Net Effect[3] (Beta)
Area:			0.04	0.04
Southwest	1.23	1.19		
Northwest	2.86	2.98		
North	0.61	0.89		
Northeast	1.24	1.17		
Southeast	1.36	1.31		
Age-Sex:			0.05	0.05
Male (55–74)	2.02	1.83		
Female (55–74)	0.70	0.76		
Male (75+)	1.14	1.44		
Female (75+)	1.72	1.76		
Marital Status:			0.06	0.07
Never married	1.64	2.03		
Married	1.26	0.86		
Separated/Divorced	4.26	4.68		
Widowed	0.91	1.30		
Living Arrangements:			0.03	0.05
Living alone	0.64	0.41		
Not living alone	1.50	1.58		
Disability Status:			0.17	0.17*
No disabling condition	0.37	0.40		
Disabled for 1–6 days	1.15	1.13		
Disabled for 7–30 days	2.35	2.26		
Disabled for 31+ days	6.25	6.21		

* Significant at 0.05 or lower level.
[1] The proportion of persons being institutionalized in nursing homes for each subclass of a predictor was adjusted for other four predictors.
[2] The gross effect refers to probability of a predictor variable to explain variation in the dependent variable without taking other factors into account.
[3] The net effect refers to the ability of a predictor variable to explain variation in the dependent variable while the effects of other predictors are controlled.
Source: 1978 SNAP Survey of the Elderly, Baltimore County, Maryland.

Dental Service: While need variables were of prime importance in determining variation in the use of physician services and hospitalization and institutionalization, predisposing factors were most important in predicting the use of dental services as measured by the likelihood of seeing a dentist during the previous year (see Table 10). A total of 8 per cent explained variance in dental visits was accounted for by predisposing variables. The selected enabling and need variables each accounted for only about 3 per cent of dental service variance. The most significant predisposing factors affecting use were economic dependency, age, and educational level. Persons who were under 75 years, had higher levels of education and who were not as likely to be economically dependent were

TABLE 10. *Regression of dental visits on predisposing, enabling and need factors (N = 1,182)*

Independent Variable	All Independent Variables	Predisposing Factors	Need Factors	Enabling Factors
1. Sex	.039	0.29		
2. Age	−.104*	−.122*		
3. Educational Level	.209*	.235*		
4. Living Alone	.026	.031		
5. Married	−.008	−.001		
6. Retired	.019	.013		
7. Economic Dependency	−.038	−.061*		
8. ADL Score	−.012		.021	
9. IADL Score	−.060		−.154*	
10. Depression Score	−.051		−.074*	
11. Perceived Need for Service	.009		.001	
12. Transportation Barriers	−.035			−.074*
13. Knowledge of Services	−.023			.051
14. Social Support	−.033			−.037
15. Medicaid Coverage	−.049			−.073*
16. Medicare A only	.009			−.028
17. Blue Cross/Blue Shield	.032			.066*
18. Prepaid Health Plan	.050			.090*
Multiple Regression	.318	.289	.180	.170
R^2	.101	.083	.032	.028

* Significant at 0.05 or lower level.
Source: 1978 SNAP Survey of the Elderly, Baltimore County, Maryland.

TABLE 11. *Multiple classification analysis of the likelihood of having a dental visit in the past year (average proportion = 0.41; $R^2 = 0.06$)*

	Proportion visiting a dentist within past year	Adjusted[1] mean	Gross Effect[2] (Eta)	Net Effect[3] (Beta)
Area:			0.20	0.11
Southwest	0.39	0.40		
Northwest	0.53	0.54		
North	0.60	0.60		
Northeast	0.40	0.40		
Southeast	0.27	0.26		
Sex-Age:			0.20	0.11
Male (55–74)	0.43	0.41		
Female (55–74)	0.45	0.45		
Male (75+)	0.34	0.32		
Female (75+)	0.29	0.52		
Marital Status:			0.08	0.11
Never married	0.44	0.42		
Married	0.44	0.46		
Separated/Divorced	0.43	0.39		
Widowed	0.36	0.34		
Living Arrangements:			0.01	0.09
Living alone	0.42	0.49		
Not living alone	0.41	0.38		
Poor:			0.08	0.05
Not poor	0.42	0.42		
Poor	0.29	0.32		

Source: 1978 SNAP Survey of the Elderly, Baltimore County, Maryland.

more apt to use dental services. Generally higher levels of instrumental and mental health functioning, having insurance coverage, and perceiving no problems in obtaining transportation were also related to having made a visit to a dentist during the past year.

Multiple classification analysis did not identify any significant predictors of dental use. Although personal characteristics proved to be important in regression analysis, the results of multiple classification analysis indicated that the effects of age on use are diluted when age and sex are considered together.

Use of social services

Table 12 shows that predisposing, enabling and need factors accounted for almost 15 per cent of the total variance in the use of social services. As we anticipated, enabling factors were the most important determinants, accounting for approximately 10 per cent of the explained variance in use as compared to less than 1 per cent accounted for by predisposing factors and approximately 4 per cent accounted for by need factors.

TABLE 12. *Regression of use of social services in predisposing, enabling and need factors*

Partial Regression Coefficients in Standard Form

Independent Variables	All Independent Variables	Predisposing Factors	Need Factors	Enabling Factors
1. Sex	.017	.018		
2. Age	.087*	.012		
3. Educational Level	−.025	.033		
4. Living Alone	.066*	.080*		
5. Married	−.012	−.013		
6. Retired	.023	.031		
7. ADL Score	−.053		−.065	
8. IADL Score	−.042		−.060	
9. Depression Score	−.032		−.078*	
10. Economic Dependency	−.081*		−.125*	
11. Perceived Need for Services	.184*		.193	
12. Transportation Barriers	−.046			−.015
13. Knowledge of Services	.322*			.311*
14. Social Support	.036			.038
15. Medicaid Coverage	.006			.100
16. Medicare A only	−.004			.006
17. Blue Cross/Blue Shield	.024			.032
18. Prepaid Health Plan	.051			.038
Multiple Regression	.382	.097	.194	.323
R²	.146	.009	.038	.104

* Significant at 0.05 or lower level

Source: 1978 SNAP Survey of the Elderly, Baltimore County, Maryland.

The variable, 'knowledge of available services' was the single most important predictor of the use of social services. As might be expected, persons who had higher levels of awareness of available services were more likely to use them. Other significant predictors included economic dependency, psychological functioning, perceived need for service, and living arrangement. Respondents who were frequent users of social services were characterized as those who lived alone, had higher levels of perceived needs, were less financially dependent and had fewer psychological problems.

Results of MCA analysis indicate that living arrangement was the only significant predictor of social service use when controlling for other popu-

TABLE 13. *Multiple classification analysis of the number of social services used in a year (Mean = 1.42; $R^2 = 0.04$)*

	Mean	Adjustable Mean[1]	Gross Effect[2] (Eta)	Net Effect[3] (Beta)
Area:			0.09	0.08
Southwest	1.46	1.47		
Northwest	1.60	1.64		
North	1.14	1.16		
Northeast	1.54	1.51		
Southeast	1.33	1.33		
Age-Sex:			0.06	0.06
Male (55–74)	1.35	1.39		
Female (55–74)	1.51	1.50		
Male (75+)	1.42	1.40		
Female (75+)	1.26	1.23		
Marital Status:				
Never married	1.42	1.38	0.03	0.04
Married	1.38	1.47		
Separated/Divorced	1.31	1.20		
Widowed	1.49	1.37		
Living Arrangement:			0.09	0.12*
Living alone	1.65	1.73		
Living with others	1.33	1.30		
isability Status:			0.07	0.07
No disabling condition	1.45	1.45		
Disabled 1–6 days	1.34	1.33		
Disabled 7–30 days	1.65	1.65		
Disabled 31+ days	1.09	1.08		

* Significant at 0.05 or lower level.
[1] The average number of social services used for each subclass of a predictor when adjusted for other predictors.
[2] The gross effect refers to probability of a predictor variable to explain variation in the dependent variable without taking other factors into account.
[3] The net effect refers to the ability of a predictor variable to explain variation in the dependent variable while the effects of other predictors are controlled.

Source: 1978 SNAP Survey of the Elderly, Baltimore County, Maryland.

lation characteristics. Persons who lived alone were likely to use more social services.

Relationship between health and social service use

While our study did not permit us to examine directly the relationship between health and social service use, our data do allow us to draw several conclusions concerning the effects of use of one service network on another. Correlation coefficients between use of physician services and use of social services ($r^2 = 0.04$) and between hospitalization and use of social services ($r^2 = 0.02$) are low indicating that use of the two service networks is unrelated. Nonetheless, we should note that a low level of knowledge of social services does tend to be associated with a higher rate of use of physician services although this finding is not statistically significant (see Table 2).

Discussion and Conclusions

Our study focused upon the (1) relative influence of predisposing enabling and need factors in predicting service use, (2) the differences in characteristics of elderly who demand health and social services, and (3) the relationship which exists between the use of the health and social services networks. We have found the Andersen model, which groups predictor variables into predisposing, enabling and need categories, to be a useful tool in conceptualizing variations in use in these two distinct service delivery networks. Moreover, the variables grouped in this model explain more variance in the social service network than in the health service network.

Specifically, our findings confirm our initial theoretical assumption that the predictors of use of these fundamentally distinct service networks are not the same. Need for service as exhibited by poor physical and psychological functioning was the most important predictor of the use of physician services and hospitalization. On the other hand, an enabling factor, knowledge of social services available was the most significant predictor of social service use. It might be expected that persons who have greater awareness of social services use more of them. Contrary to our assumptions, however, availability of social support as measured in this study was not a significant predictor of health or social service use. Perhaps living alone may be a better indicator of the absence of social support than the measures employed in this study.

Our findings probably reflect distinctions between health and social service systems in type of services offered, patterns of referral, and in

familiarity with services rendered. To elaborate, physical symptoms may be more easily recognized by an older person than the need for counseling or companionship. Referral to medical services may also be more direct. Further, from childhood to old age, persons establish a pattern of dependence on physicians. Contrary to this, the need for the kind of assistance offered by social services may not exist until old age. Patterns of independence established throughout life coupled with unfamiliarity with the kinds of help which social services can give may reduce their use. This, no doubt, explains the importance of knowledge of services in our findings pertaining to social services.

Looking at profiles of those who use health and social services, we found that the elderly who have poor psychological functioning, poor ability to perform instrumental tasks in daily living such as telephoning, visiting, handling financial matters and maintaining a home and who perceived the need for social services were the most likely to be hospitalized and to use physician services. Users of these health services were also characterized as having a disabling condition, were more likely to be widowed and in the case of physician services were more apt to live alone.

Users of social services also perceived the need for these services. Although functional variables were not significant predicators of use, users of social services, contrary to the users of health services, tended to be persons with comparatively good psychological functioning and good ability to perform instrumental activities. Social service users were also significantly more likely to live alone.

Findings with regard to the functional status of health and social service users prompt questions regarding the appropriateness of the use of health and social services. Although correlation analysis shows that use of health and social services is not significantly correlated, profiles of users suggest that there may be a relationship between these service networks which is, as yet, untapped. Certainly, the substitutability of services should be probed in the future. If we assume that physicians may be filling a subjective need of the psychologically depressed or the instrumentally impaired, then we must ask if these needs could not be met more efficiently and at less cost by social services. On the other hand, if we assume that physicians are not helping persons with those problems, then a large area of unmet need for social services exists among the elderly population. Examining use from another perspective, we must ask why those most capable in psychological and instrumental functioning use social services more than the impaired. The key seems to lie in the ability to acquire knowledge about where to obtain needed services.

Thus far, our discussion has neglected some important distinctions which we found within the health services network itself in predictors of

service use. While we have drawn comparisons between use of health services, as a whole, stressing the components use of physician services and hospitalization and the social service network, differences also exist in predictors of health services depending upon whether services are discretionary (directed toward conditions for which immediate care is not required, i.e. dental services) or non-discretionary (conditions for which immediate care is required, i.e. physician services, hospitalization). While need was a primary determinant of non-discretionary service use, predisposing factors specifically age, education and level of financial dependence were the most important in determining dental service use. Persons most likely to have seen a dentist were under 75 years, had a comparatively higher level of educational attainment and were less likely to be financially dependent. Apparently dental services rank low in the hierarchy of medical needs of older persons with poor financial resources. Chronological age may also eliminate need for dental services as many older people have dentures and may feel they do not need a dentist.

Clearly, our findings from a study of health and social service use delineate several areas for future program development. From the social planning perspective, our findings indicate a need to: (1) raise the level of awareness about social service programs of the depressed and impaired elderly who may have greatest need for supportive services and (2) strengthen referral networks between physicians and providers of social services to the elderly. Channeling networks and information and referral services which are currently being developed could help strengthen ties between the medical and social work community.

This study has demonstrated that a systematic assessment of the social service network can be of as much value to social planners as the systematic analysis of health services networks has been shown to be to health planners. Research should not fail to consider the development of comprehensive models of social service use.

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APPENDIX

List of Social Services Offered by the Baltimore County Department of Aging, 1978.

Health care services:
   Visiting Nurse Association
   Hospital Social Service Department
   Baltimore County Health Department
   Community Home Care
   Alcoholics Anonymous
   Baltimore County Neighborhood Health Center

Personal services:
   Mail Alert Program
   William Day Care Program
   Emergency Assistance
   Senior Citizens Discount Card
   Senior Aide Program
   Circuit Breaker Tax Program
   Rent Supplements to Senior Renters
   Supplementary Security Income
   Telecare

Miscellaneous services:
Employment
   Over 60 Counseling and Employment Service
   Retired Senior Volunteer Programs

Education
   Community College Programs
   Library Services for Seniors
   Senior Digest

Nutrition
   Lunch Plus
   Meals on Wheels

Transportation: Senioride

Information and referral:
   Recreation: Senior Center Program